

Remarks

The above-noted Official Action mailed 01/04/2007 has been received and carefully studied. References were obtained independently of the Official Action.

Entry of the foregoing amendment and reconsideration of the application in view of the above amendment and the following remarks is hereby requested.

In the Official Action, Examiner Beisner objected to the drawings. In response, four replacement drawing sheets, each labelled "Replacement Sheet", are provided and are attached hereto. Each "Replacement Sheet" should remove all of the objections of Examiner Beisner.

More specifically with respect to FIG. 4, reference numerals 93 and 12 have been added, representing, respectively, pairs of electrodes 93 and non-conductive base member 12 which are discussed in the specification.

Turning to the specification, the misspelled "mult-well" has been changed to --multi-well-- at the following locations: page 9, line 15; and page 16, line 6.

Also, the misspelled "electodes" has been changed to --electrodes-- at page 18, line 13.

Also, the word "separate" has been inserted into the following locations in the specification:

on page 28, line 23, between "with" and "standard"; and

on page 29, line 2, between "the" and "microplate".

The separate status of the conventional multiple well plate 11 is clearly described in the specification and is clearly shown in FIGs. 3-6.

Turning to the claims, Claims 1-7 are currently in the case.

Claims 1, 4, and 6 are currently amended. Now, all of claims 1, 4, and 6 are independent claims.

Claims 2, 3, and 7 are as originally presented.

Now turning to the claims in view of the Official Action, Examiner Beisner cited Malin et al (5,643,742) and Giaever et al (5,187,096) and rejected the Applicants claims under 35 USC § 103 as being obvious.

With respect to Malin et al (5,643,742), as shown in FIG. 1, there are twenty-four pairs of electrode pins 38 in a lid. Ostensibly, the twenty-four pairs of electrode pins 38 are provided for placement in separate twenty-four nonelectric cells which are arrayed in a matrix of four-rows and six-columns of nonelectric cells. The lid having the electrode pins 38 is separable and not integral with the matrix array of nonelectric cells.

However, even though the nonelectric cells are arrayed in a four-row by six-column matrix, and even though the pairs of electrode pins 38 are also arrayed in a complementary four-row by six-column matrix, the electrical conductors that are connected to the electrode pins 38 are not arrayed in a four-row by six-column matrix of conductors that is taught by the principles of the Applicant's claimed invention.

Proof of the failure of Malin et al (5,643,742) to employ a matrix of electrical conductors connected to the electrode pins 38 is revealed in a number of ways.

First, as shown in FIGs. 1, 2, and 3, more than fifty-two electrically conductive traces 24 can be counted on the printed circuit board 22. In sharp contrast, if the matrix array of conductors of the Applicant's claimed invention were used, then only ten electrically conductive traces would be needed for energizing the four-row by six-column array of forty-eight electrode pins 38. The twenty-four pairs of electrode pins 38 require forty-eight conductors because there is a one-to-one correspondence between each electrode pin 38 and each electrically conductive trace 24 on the printed circuit board 22. Although fifty-two is not exactly equal to forty-eight, clearly, each of the forty-eight electrode pins 38 has a dedicated electrically conductive trace 24 on the printed circuit board 22.

Second, in the specification of Malin et al (5,643,742), at column 5, lines 39-44, there is a teaching that "One of the

switches 62" is selected to provide a voltage to a "pair of pins 38" that extend into a well 16 being monitored. Clearly, for each pair of pins 38 there is one switch 62. For twenty-four pairs of pins 38 there are twenty-four switches 62. And, for each of the twenty-four switches 62, there are two conductors. That is, twenty-four switches 62 require forty-eight conductors. In contrast, if the principles of the Applicant's claimed invention were followed, there would be ten switches involving 10 conductors. See Applicant's currently claimed invention in claim 1.

Moreover, as shown in FIG. 4, the electrode pins 38 are not placed against the walls of the cells in which the electrodes are placed. Pairs of electrode pins 38 and conductors connected to them are not arranged in a matrix array of rows and columns, provided by the Applicant's currently claimed invention. See Applicant's currently claimed invention in claim 4.

Turning to Giaever et al (5,187,096), Giaever et al (5,187,096) disclose a matrix array of well assemblies 10 having two well portions: nonconductive well portions, e. g. cylinders 12; and electrically conductive electrode well portions, e. g. cylindrical holes 20 in conductor strips 16 and small electrode areas 30 on conductor strips 24. As clearly described in Giaever et al (5,187,096) and shown in FIG. 1, the cylindrical holes 20 in conductor strips 16 and the small electrode areas 30 on

conductor strips 24 form electrically conductive electrode portions of the well assemblies 10.

More specifically, upper electrodes 18 include cylindrical holes 20 in conductor strips 16 which are located below the cylinders 12 of the well assemblies 10. In this respect, the cylindrical holes 20 form electrically conductive electrode portions of the matrix array of the well assemblies 10.

Moreover, the photoresist layer 26 includes small holes 28 positioned within the holes 20 for each well assembly 10, to expose small electrode areas 30 of the conductor strips 24. The electrode areas 30 form small electrodes which operate in conjunction with the large electrodes 18 (See column 5, lines 39-53). In this respect, the electrode areas 30 also form electrically conductive electrode portions of the matrix array of well assemblies 10.

Stated somewhat differently, Giaever et al (5,187,096) disclose integrated well/electrodes. Such integrated well/electrodes are much too costly to be disposable, as are the conventional multiple well plates having multiple nonconductive wells, that are used with the Applicant's currently claimed invention. As stated in the Applicants specification on page 9, lines 6-9, the Applicants invention "provides an electroporation apparatus in which simple, plastic disposable multi-well plates can be employed and disposed of readily".

Clearly, with Giaever et al (5,187,096), both the upper electrodes 18 and the lower electrodes 30 form electrically conductive portions of the well assemblies 10. This would be true even if the nonconductive cylinders 12 would be removed from the well assemblies 10.

This aspect of Giaever et al (5,187,096) is clearly different from the Applicant's currently claimed invention which clearly recites that the wells are nonconductive wells. There are no electrically conductive portions of the wells into which the electrodes of the Applicant's currently claimed invention are inserted.

In addition, as stated in the Applicant's currently claimed invention in currently amended claims 1, 4, and 6, the conventional multiple well plate having multiple nonconductive wells are separate from the electrode assembly. As stated above, with Giaever et al (5,187,096), there are integrated well/electrodes wherein the electrodes and the wells are not separable from each other.

In summary, Malin et al (5,643,742) discloses a matrix array electrodes used with a separate matrix array of nonconductive wells. However, with Malin et al (5,643,742), the matrix array of electrodes does not use a matrix array of electrical conductors connected to the electrodes. On the other hand, Giaever et al (5,187,096) discloses a matrix array of well assemblies 10 that integrally and inseparably include a matrix

array large electrodes 18 and small electrodes 30. Therefore, with Giaever et al (5,187,096), the matrix array of large electrodes 18 and small electrodes 30 form integral and inseparable electrically conductive well portions of the well assemblies 10. In contrast, to repeat for emphasis, the Applicant's currently claimed invention does not include electrically conductive well portions.

In addition, it is noted that Giaever et al (5,187,096) was issued in 1993, and Malin et al (5,643,742) was issued in 1997. Clearly, if the benefits would be obvious to a person of ordinary skill in the art to combine the teachings of the earlier Giaever et al (5,187,096) with the later Malin et al (5,643,742) to arrive at the Applicant's currently claimed invention, then the later Malin et al (5,643,742) would have done so because the teaching of Giaever et al (5,187,096) was in the public domain for more than four years before the issuance of Giaever et al (5,187,096). This lack of Malin et al (5,643,742) disclosing the principles of Giaever et al (5,187,096) is more evidence that Malin et al (5,643,742) and Giaever et al (5,187,096) should not be combined by Examiner Beisner to prevent the patenting of the Applicant's currently claimed invention.

In view of the above, it is respectfully submitted that the combining of Malin et al (5,643,742) with Giaever et al (5,187,096) is not proper to prevent the patenting of the

Applicant's currently claimed invention, as set forth in claim 1.

In addition, with respect to the Applicant's currently claimed invention as set forth in claim 4, neither Malin et al (5,643,742) nor Giaever et al (5,187,096) discloses a gap between adjacent pairs of electrodes for adjacent cells so that the gap between the electrodes straddles the intervening wall fits into the gap between the adjacent pairs of electrodes. The relevant language in claim 4 is set forth as follows:

wherein an adjacent electrode pair spacing gap is provided between a first electrode on one pair of electrodes and second electrode on an adjacent pair of electrodes, such that an inside wall of the multiple well plate is received in said adjacent electrode pair spacing gap.

This spacing between adjacent pairs of electrodes to straddle an intervening wall of adjacent cells is discussed in the specification at page 12, lines 1-15 and from page 20, line 23 to page 21, line 8. Significant benefits obtained are (1) relatively tight friction fits between electrodes and walls of the nonelectric wells and (2) leaving a maximum amount of space for sample reception and electroporation in the respective wells of the multiple well plate 11. Clearly, such structures and benefits are not disclosed in either Malin et al (5,643,742) or Giaever et al (5,187,096).



In addition, with respect to the Applicant's currently claimed invention as set forth in claim 6, neither Malin et al (5,643,742) nor Giaever et al (5,187,096) discloses access channels in the base member to provide access to the nonconductive wells.

The relevant language in claim 6 is set forth as follows:

wherein said base member includes a plurality of access channels which are in registration with the wells of the multiple well plate.

Benefits of having these access channels is disclosed in the specification at page 7, lines 19-24, and from page 13, line 19 to page 20, line 2. Such benefits include (1) adding material to wells even after an electrode assembly has been connected to a nonelectric array of wells and (2) preventing cross contamination between adjacent wells. Clearly, such structures and benefits are not disclosed in either Malin et al (5,643,742) or Giaever et al (5,187,096).

No additional fees are due with respect to this AMENDMENT.

On the basis of the above amendment and remarks, reexamination and reconsideration of the application is requested.

It appears that all matters have been addressed satisfactorily, and that the case is now in condition for a complete allowance; and the same is respectfully urged.

In view of the foregoing, it is respectfully requested that claims 1-7 be deemed allowable. If the Examiner believes otherwise, or has any comments or questions, or has any suggestions for putting the case in condition for final allowance, the Examiner is respectfully urged to contact the undersigned attorney of record at the telephone number below, so that an expeditious resolution may be effected and the case passed to issue promptly.

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Date

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